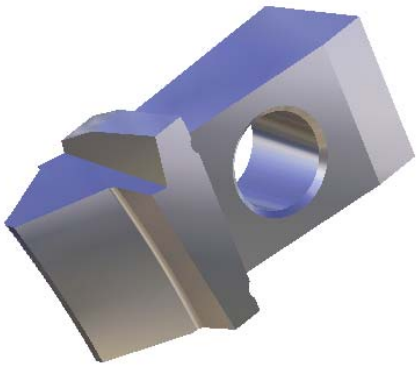
Inserted Spiral Bevel Blades, Gleason

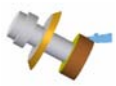
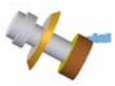
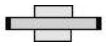
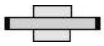
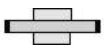
A12-315



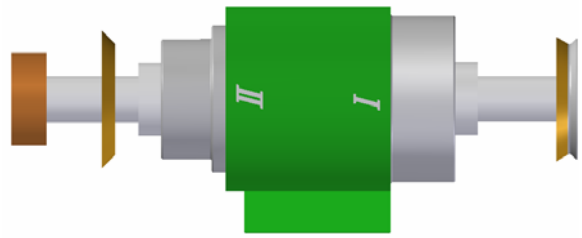
Mounted on rotating discs, this tool is used to produce spiral bevel gears using outer and inner blade surface. When grinding the protuberance, the tool is clamped in special tool holder with rotational axis perpendicular to the curved surface. Pressure angle and profile radius are ground in one operation using profiled wheel.

Used wheels need to be dressed between the cycles. Dressing time depends on wheel material, stock removal and dressing roll and unit configuration as well. Dressing times vary from 30sec up to 4min per wheel.

1. Cycletime for Production (Inner Blades)

Tool specifications Part No. 300357 Material M2					
Operations	 rake angle	 outside surface roughing/ finishing	 Inner profile roughing	 top chamfer roughing	 Inner profile finishing
Feed [mm/Min]	200	300	300	300	200
Power [kW]	2	7	7	1	3
Cutting feed [m/s]	32	24	24	24	30
Used wheels					
Grinding time [s]	20	360	300	30	360
Total cycle time	17 min 49 sec				
The mentioned cycle times are indicative. The material to be ground, different grinding wheels or other coolants can influence the cycle times considerably.					

2. Used Grinding Wheels



1x Ø100 1A1 vetrified
1x Ø150 profiled ceramic
1x Ø175 12V9 B126

3. Machine and Software Requirements

Machines:	5-axes CNC grinders: CORVUS GDS, GEMINI DMR
Control:	Fanuc 160i
Coolant:	Synthetic Oil, pressure > 6 bar
Software:	Quinto 5.0 & Meshintersector

J. SCHNEEBERGER Maschinen AG 4914 Roggwil Switzerland
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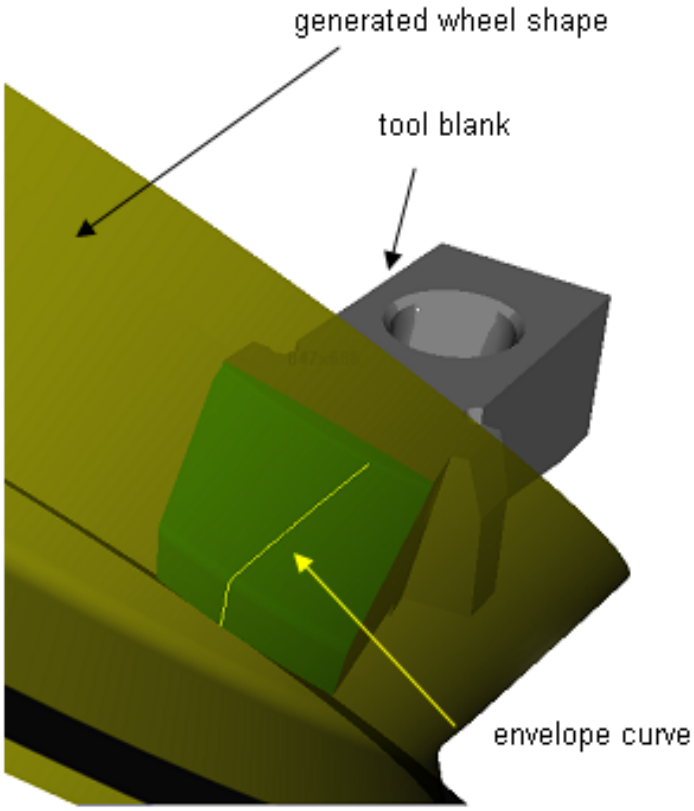
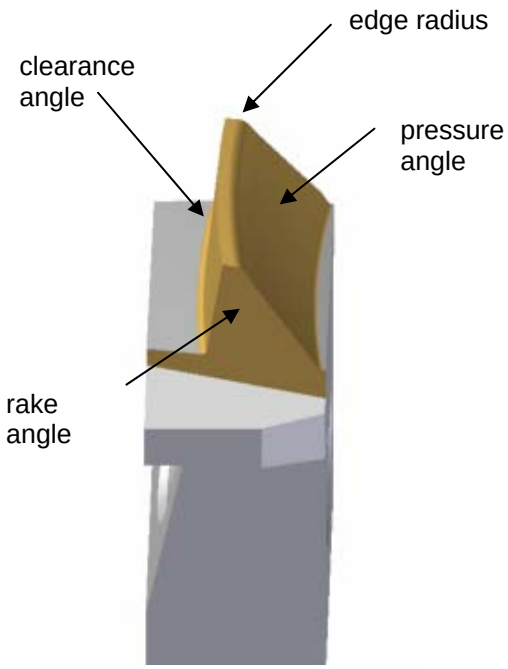
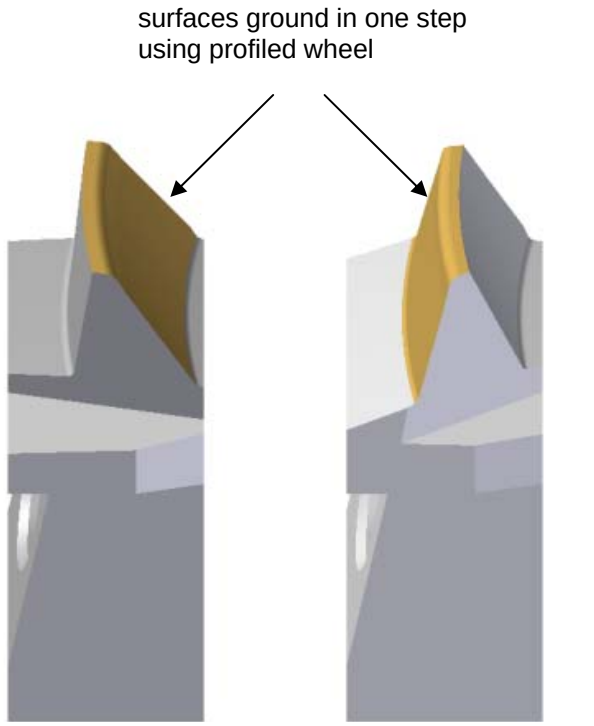


The wheel profile calculation is done using "Meshintersector" software, based on the solid tool model and grinding surface selection. The selected surfaces are displayed green in the grafics on left side. The profile is generated as DXF with the desired resolution and accuracy.

Beside the generated wheel profile and shape, the grinding contact curve (envelope) is also displayed.

The entire pressure angle blade profile including edge radius is ground in one step (inside curve or outside curve) using the profiled wheel.





Inside cutting surface

Outside cutting surface

Responsible engineer: SIW, 11.03.2008

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